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63.20D *Phonon states and bands, normal modes, and phonon dispersion*
63.20H *Phonon–phonon interactions*
63.20K *Phonon–electron interactions*
63.20M *Phonon–defect interactions*
63.20P *Localized modes*
63.50 Vibrational states in disordered systems
63.70 Statistical mechanics of lattice vibrations
63.75 Statistical mechanics of displacive phase-transitions
63.90 Other topics in lattice dynamics and crystal statistics

64.00 EQUATIONS OF STATE, PHASE EQUILIBRIA, AND PHASE TRANSITIONS
64.10 General thoery of equations of state and phase equilibria
64.30 Equations of state of specific substances
64.60 General studies of phase transitions
64.70 Phase equilibria, phase transitions, and critical points
64.70D *Solid–liquid transitions*
64.70E *Transitions in liquid crystals; glass transitions*
64.70F *Liquid–vapour transitions*
64.70H *Solid–vapour transitions*
64.70J *Liquid–liquid transitions*
64.70K *Solid–solid transitions*
64.75 Solubility, segregation, and mixing
64.80 Other phase properties of systems
64.90 Other topics in equations of state, phase equilibria, and phase transitions

65.00 THERMAL PROPERTIES OF CONDENSED MATTER
65.20 Heat capacities of liquids
65.40 Heat capacities of solids
65.50 Thermodynamic properties and entropy
65.70 Thermal expansion and thermomechanical effects
65.90 Other topics in thermal properties of condensed matter

66.00 TRANSPORT PROPERTIES OF CONDENSED MATTER (NONELECTRONIC)
66.10 Diffusion and ionic conduction in liquids
66.20 Diffusive momentum transport
66.30 Diffusion in solids
66.30D *Theory of diffusion and ionic conduction in solids*
66.30F *Self-diffusion in metals, semimetals, and alloys*
66.30H *Self-diffusion and ionic conduction in nonmetals*
66.30J *Diffusion, migration, and displacement of impurities*
66.30L *Diffusion, migration, and displacement of other defects*
66.30N *Chemical interdiffusion*
66.60 Thermal conduction in nonmetallic liquids
66.70 Nonelectronic thermal conduction and heat-pulse propagation in nonmetallic solids
66.90 Other topics in nonelectronic transport properties

67.00 QUANTUM FLUIDS AND SOLIDS: LIQUID AND SOLID HELIUM
67.20 Quantum effects on the structure and dynamics of nondegenerate fluids
67.40 Boson degeneracy and superfluidity of helium-4
67.50 Fermi fluids; liquid helium-3
67.60 Mixed systems; liquid helium-3, -4 mixtures
67.70 Films
67.80 Solid helium and related quantum crystals
67.90 Other topics in quantum fluids (e.g. neutron-star matter)

68.00 SURFACES AND INTERFACES: THIN FILMS AND WHISKERS
68.10 Fluid surfaces and interfaces with fluids
68.15 Liquid thin films
68.20 Solid surface structure
68.25 Mechanical and acoustical properties of solid surfaces and interfaces
68.30 Dynamics of solid surfaces and interface vibrations
68.40 Surface energy of solid; thermodynamic properties
68.45 Solid–fluid interface processes
68.48 Solid–solid interfaces
68.55 Thin film growth, structure, and epitaxy
68.60 Physical properties of thin films, nonelectronic
68.70 Whiskers and dendrites: growth, structure, and nonelectronic properties
68.90 Other topics in the structure and nonelectronic properties of surfaces and thin films

70.00 CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC, AND OPTICAL PROPERTIES

71.00 ELECTRON STATES
71.10 General theories and computational techniques
71.20 Electronic density of states determinations
71.25 Nonlocalized single-particle electronic states
71.25C *Techniques of band-structure calculation (general theory, applications of group theory, analytic continuation, etc.)*
71.25H *Measurement of Fermi surface parameters*
71.25J *Effective mass and g-factors*
71.25L *Electron energy states in liquid metals*
71.25M *Electron energy states in amorphous and glassy solids*
71.25P *Band structure of crystalline metals*
71.25R *Band structure of crystalline elemental semiconductors*
71.25T *Band structure of crystalline semiconductor compounds and insulators*
71.30 Metal–insulator transitions
71.35 Excitons and related phenomena
71.36 Polaritons
71.38 Polarons and electron–phonon interactions
71.45 Collective effects
71.45G *Exchange, correlation, dielectric and magnetic functions, plasmons*
71.45J *Fermi–Thomas model*
71.45N *Calculations of total electronic binding energy*
71.50 Localized single-particle electronic states
71.55 Impurity and defect levels
71.55J *Localization in disordered structures*
71.65 Positron states
71.70 Level splitting and interactions
71.70C *Crystal and ligand fields*
71.70E *Spin-orbit coupling, Zeeman, Stark, and strain splitting*
71.70G *Exchange interactions*
71.70J *Nuclear states and interactions*
71.90 Other topics in electron states

72.00 ELECTRONIC TRANSPORT IN CONDENSED MATTER
72.10 Theory of electronic transport; scattering mechanisms
72.15 Electronic conduction in metals and alloys
72.15C *Electrical and thermal conduction in amorphous and liquid metals and alloys*
72.15E *Electrical and thermal conduction in crystalline metals and alloys*
72.15G *Galvanomagnetic and other magnetotransport effects*
72.15H *Thermomagnetic effects*
72.15J *Thermoelectric effects*
72.15L *Relaxation times and mean free paths*
72.15N *Collective modes; e.g. in one-dimensional conductors*
72.15Q *Scattering mechanisms and Kondo effect*
72.20 Conductivity phenomena in semiconductors and insulators
72.20D *General theory, scattering mechanisms*
72.20F *Low-field transport and mobility; piezoresistance*
72.20H *High-field and nonlinear effects*
72.20J *Charge carriers: generation, recombination, lifetime, and trapping*
72.20M *Galvanomagnetic and other magnetotransport effects*
72.20N *Thermomagnetic effects*
72.20P *Thermoelectric effects*
72.30 High-frequency effects; plasma effects
72.40 Photoconduction and photovoltaic effects; photodielectric effects
72.50 Acoustoelectric effects
72.55 Magnetoacoustic effects
72.60 Mixed conductivity and conductivity transitions
72.70 Noise processes and phenomena
72.80 Conductivity of specific semiconductors and insulators
72.80C *Elemental semiconductors*
72.80E *III-V and II-VI semiconductors*
72.80G *Transition-metal compounds*
72.80J *Other crystalline inorganic semiconductors*
72.80L *Organic semiconductors*
72.80N *Amorphous and glassy semiconductors*
72.80P *Liquid semiconductors*

72.90 Other topics in electronic transport in condensed matter

73.00 ELECTRONIC STRUCTURE AND ELECTRICAL PROPERTIES OF SURFACES, INTERFACES, AND THIN FILMS
73.20 Electronic surface states
73.25 Surface conductivity
73.30 Surface double layers, Schottky barriers, and work functions
73.40 Interfaces
73.40B *Static electrification*
73.40G *Tunnelling, general*
73.40J *Metal-to-metal contacts*
73.40L *Semiconductor-to-semiconductor contacts, p–n junctions, and heterojunctions*
73.40M *Semiconductor–electrolyte contacts*
73.40N *Metal–nonmetal contacts*
73.40Q *Metal–insulator–semiconductor structures*
73.40R *Metal–insulator–metal structures*
73.40S *Metal–semiconductor–metal structures*
73.60 Electronic properties of thin films
73.60D *Metallic thin films*
73.60F *Semiconductor films*
73.60H *Insulating thin films*
73.60K *Superconducting films*
73.90 Other topics in electrical properties of surfaces, interfaces, and thin films

74.00 SUPERCONDUCTIVITY
74.10 Occurrence, critical temperature
74.20 Theory
74.20F *BCS theory and its applications*
74.30 General properties
74.30C *Magnetization curves, Meissner effect, penetration depth*
74.30E *Thermodynamic properties; thermal conductivity*
74.30G *Response to electromagnetic fields, nuclear magnetic resonance, ultrasonic attenuation*
74.40 Fluctuations and critical effects
74.50 Proximity effects, tunnelling phenomena, and Josephson effect
74.55 Type-I superconductivity
74.60 Type-II superconductivity
74.60E *Mixed state, H_{c2} surface sheath*
74.60G *Flux pinning; fluxon–defect interactions*
74.60J *Critical currents*
74.70 Superconducting materials
74.70D *Material effects on T_c, K, critical currents*
74.70G *Type-I superconductors (non-transition metals)*
74.70L *Type-II superconductors (transition metals, alloys and compounds)*
74.70N *Dirty superconductors*
74.70P *Materials for high-field applications*
74.90 Other topics in superconductivity

75.00 MAGNETIC PROPERTIES AND MATERIALS
75.10 General theory and models of magnetic ordering
75.10D *Crystal-field theory and spin Hamiltonians*
75.10H *Ising and other classical spin models*
75.10J *Heisenberg and other quantized localized spin models*
75.10L *Band and itinerant models*
75.20 Diamagnetism and paramagnetism
75.20C *Nonmetals*
75.20E *Metals and alloys*
75.20H *Local moment in dilute alloys; Kondo effect*
75.25 Spin arrangements in magnetically ordered materials (neutron studies, etc.)
75.30 Magnetically ordered materials, other intrinsic properties
75.30C *Saturation moments and magnetic susceptibility*
75.30D *Spin waves*
75.30E *Exchange and superexchange interactions*
75.30G *Anisotropy*
75.30H *Magnetic impurity interactions*
75.30K *Magnetic phase boundaries*
75.30S *Magnetocaloric effect*
75.40 Critical-point effects, specific heats, short-range order
75.50 Studies of specific magnetic materials
75.50B *Ferromagnetism of Fe and its alloys*
75.50C *Ferromagnetism of other metals*
75.50D *Ferromagnetism of nonmetals*
75.50E *Antiferromagnetics*
75.50G *Ferrimagnetics*
75.50K *Amorphous magnetic materials*
75.50M *Magnetic liquids*
75.60 Domain effects, magnetization curves, and hysteresis
75.60C *Domain walls and domain structure*
75.60E *Magnetization curves, hysteresis, Barkhausen and related effects*
75.60G *High coercivity materials*
75.60J *Fine-particle systems*
75.60L *Magnetic aftereffects*
75.60N *Magnetic annealing and temperature-hysteresis effects*
75.70 Magnetic films and plates
75.70K *Domain structure (magnetic bubbles)*
75.80 Magnetomechanical and magnetoelectric effects, magnetostriction
75.90 Other topics in magnetic properties and materials

76.00 MAGNETIC RESONANCES AND RELAXATION IN CONDENSED MATTER: MOSSBAUER EFFECT
76.20 General theory of resonances and relaxation
76.30 Electron paramagnetic resonance and relaxation
76.30D *Ions and impurities: general*
76.30F *Iron group (3d) ions and impurities (Ti–Cu)*
76.30H *Platinum and palladium group (4d and 5d) ions and impurities (Zr–Ag and Hf–Au)*
76.30K *Rare-earth ions and impurities*
76.30M *Colour centres and other defects*
76.30P *Conduction electrons*
76.30R *Free radicals*
76.40 Diamagnetic and cyclotron resonances
76.50 Ferromagnetic, antiferromagnetic, and ferrimagnetic resonances; spin wave resonance
76.60 Nuclear magnetic resonance and relaxation
76.60C *Chemical and Knight shifts*
76.60E *Relaxation effects*
76.60G *Quadrupole resonance*
76.60L *Spin echoes*
76.70 Magnetic double resonances and cross effects
76.70D *Electron-nuclear double resonance (ENDOR)*
76.70E *Dynamical nuclear polarization*
76.70F *Double nuclear magnetic resonance (DNMR)*
76.70H *Optical double magnetic resonance (ODMR)*
76.70K *Electron double resonance (ELDOR)*
76.80 Mossbauer effect; other gamma-ray spectroscopy
76.90 Other topics in magnetic resonances and relaxation

77.00 DIELECTRIC PROPERTIES AND MATERIALS
77.20 Permittivity
77.30 Polarization and depolarization effects
77.40 Dielectric loss and relaxation
77.50 Dielectric breakdown and space-charge effects
77.55 Dielectric thin films
77.60 Piezoelectricity and electrostriction
77.70 Pyroelectric and electrocaloric effects
77.80 Ferroelectricity and antiferroelectricity
77.80B *Transitions and Curie point*

77.80D *Domain structure and effects; hysteresis*
77.85 Electrical resonances
77.90 Other topics in dielectric properties and materials

78.00 OPTICAL PROPERTIES AND CONDENSED MATTER SPECTROSCOPY AND OTHER INTERACTIONS OF MATTER WITH PARTICLES AND RADIATION
78.20 Optical properties and materials
78.20B *General theory (for pure homogeneous materials)*
78.20D *Optical constants and parameters*
78.20E *Optical rotatory power*
78.20F *Birefringence*
78.20H *Piezo-, elasto- and acousto-optical effects*
78.20J *Electro-optical effects*
78.20L *Magneto-optical effects*
78.20N *Thermo-optical effects*
78.30 Infrared and Raman spectra and scattering
78.35 Brillouin and Rayleigh scattering
78.40 Visible and ultraviolet spectra
78.45 Stimulated emission
78.50 Impurity and defect absorption in solids
78.55 Photoluminescence
78.60 Other luminescence spectra and radiative recombination
78.60F *Electroluminescence*
78.60H *Cathodoluminescence, ionoluminescence*
78.60K *Thermoluminescence*
78.60M *Sonoluminescence, triboluminescence*
78.60P *Chemiluminescence*
78.65 Optical properties of thin films
78.70 Other interactions of matter with particles and radiation
78.70B *Positron annihilation*
78.70C *X-ray scattering*
78.70D *X-ray absorption and absorption edges*
78.70E *X-ray emission threshold and fluorescence*
78.70G *Microwave and radiofrequency spectra*
78.90 Other topics in optical properties of condensed matter and other interactions of matter with particles and radiation

79.00 ELECTRON AND ION EMISSION BY LIQUIDS AND SOLIDS: IMPACT PHENOMENA
79.20 Impact phenomena
79.20D *Laser-light impact phenomena*
79.20F *Electron impact: Auger emission*
79.20H *Electron impact: secondary emission*
79.20K *Other electron impact phenomena*
79.20N *Atom, molecule, and ion impact*
79.20R *Atomic and molecular beam interactions*
79.40 Thermionic emission
79.60 Photoemission and photoelectron spectra
79.70 Field emission and field ionization
79.75 Exoelectron emission
79.80 Resonance tunnelling
79.90 Other topics in emission and impact phenomena in condensed matter

80.00 **CROSS-DISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY**

81.00 MATERIALS SCIENCE
81.10 Methods of crystal growth and purification
81.10B *Growth from vapour*
81.10D *Growth from solutions*
81.10F *Growth from melts*
81.10H *Zone melting and zone refining*
81.10J *Growth from solid phases*
81.15 Methods of thin film depositions
81.15C *Deposition by cathodic sputtering*
81.15G *Vacuum deposition*
81.15H *Chemical vapour deposition*
81.15J *Ion plating and other vapour deposition*
81.15L *Deposition from liquid phases (melts and solutions)*
81.20 Other methods of preparation of materials
81.20C *Vacuum methods*
81.20E *Powder techniques, compaction and sintering*
81.20G *Specific metals and alloys (compacts, pseudoalloys)*
81.20J *Dispersion-, fibre- and platelet-reinforced metal-based composites*
81.20L *Ceramics and refractories*
81.20N *Cermets, ceramic and refractory composites*
81.20P *Glasses*
81.20Q *Glass-based composites, vitroceramics*
81.20S *Polymers*
81.20T *Reinforced polymers and polymer-based composites*
81.30 Phase diagrams and microstructures developed by solidification and solid–solid phase transformations
81.30B *Phase diagrams of metals and alloys*
81.30D *Phase diagrams of other materials*
81.30F *Solidification*
81.30H *Constant-composition solid–solid phase transformations: polymorphic, massive, order–disorder*
81.30K *Martensitic transformations*
81.30M *Precipitation*
81.40 Treatment of materials and its effects on microstructures and properties
81.40C *Solid solution hardening, precipitation hardening, dispersion hardening*
81.40E *Cold working, work hardening; annealing, recovery and recrystallisation; textures*
81.40G *Other heat and thermomechanical treatments*
81.40J *Elasticity and anelasticity*
81.40L *Deformation, plasticity and creep*
81.40N *Fatigue, embrittlement, and fracture*
81.40P *Friction, lubrication, and wear*
81.40R *Electrical and magnetic properties (related to treatment conditions)*
81.40T *Optical properties (related to treatment conditions)*
81.60 Corrosion, oxidation and surface treatments
81.60B *Metals and alloys*
81.70 Materials testing
81.90 Other topics in materials science

82.00 PHYSICAL CHEMISTRY
82.20 Chemical kinetics
82.20K *Potential energy surfaces for chemical reactions*
82.20M *Nonequilibrium kinetics*
82.20R *Energy distribution and transfer, relaxation*
82.30 Specific chemical reactions; reaction mechanisms
82.35 Polymer reactions and polymerization
82.40 Chemical kinetics and reactions: special regimes
82.40D *Atomic and molecular beam reactions*
82.40T *Chemiluminescence and chemical laser kinetics*
82.45 Electrochemistry and electrophoresis
82.50 Photochemistry and radiation chemistry
82.50E *Photodissociation, photoionization as studied by luminescence and radiationless transitions*
82.55 Radiochemistry
82.60 Chemical thermodynamics
82.65 Surface processes
82.70 Disperse systems
82.80 Chemical analysis and related physical methods of analysis
82.90 Other topics in physical chemistry

86.00 ENERGY RESEARCH AND ENVIRONMENTAL SCIENCE
86.10 Energy resources and their utilisation
86.10B *Fossil and other fuels*
86.10D *Wind energy*
86.10F *Tidal and flow energy*
86.10H *Geothermal energy*
86.10K *Solar energy*
86.10Z *Other topics*
86.30 Energy conversion
86.30D *Electrochemical conversion: general*
86.30E *Primary cells*
86.30F *Secondary cells*
86.30G *Fuel cells*
86.30J *Photoelectric conversion: solar cells and arrays*
86.30K *Photoelectrochemical conversion*
86.30L *Electrogasdynamic and magnetohydrodynamic conversion*
86.30M *Thermoelectric conversion*
86.30N *Thermionic conversion*
86.30P *Photosynthesis*
86.30Q *Chemical energy conversion*
86.30R *Thermal energy conversion (heat engines and heat pumps)*
86.30S *Photothermal conversion*
86.30Z *Other topics*
86.40 Energy storage (secondary energy)
86.40C *Storage in mechanical energy*
86.40F *Storage in thermal energy*
86.40H *Storage in chemical energy*
86.40K *Hydrogen storage and technology*
86.40Z *Other topics*
86.60 Requirement for energy: ecological aspects
86.70 Environmental science
86.70C *Soil*
86.70E *Water*
86.70G *Atmosphere*
86.70J *Noise*
86.70L *Measurement techniques in environmental science*
86.70Z *Other topics*
86.90 Other topics in energy research and environmental science

87.00 BIOPHYSICS, MEDICAL PHYSICS, AND BIOMEDICAL ENGINEERING
87.10 General, theoretical, and mathematical biophysics
87.15 Molecular biophysics
87.15B *Structure, configuration, conformation, and active sites at the biomolecular level*
87.15M *Interactions with radiations at the biomolecular level*
87.16 Biothermics
87.20 Membrane biophysics
87.25 Cellular biophysics
87.25D *Biological transport; cellular and subcellular transmembrane physics*
87.30 Biophysics of neurophysiological processes
87.32 Physiological optics, vision
87.32C *Anatomy and optics of eye*
87.32E *Physiology of the eye; nerve structure and function*
87.32L *Light detection; adaptation and discrimination*
87.32N *Colour detection; adaptation and discrimination*
87.32S *Psychophysics of vision, visual perception, binocular vision*
87.34 Audition
87.36 Speech
87.38 Mechano- and chemio-ceptions
87.40 Biomagnetism
87.45 Biomechanics, biorheology, biological fluid dynamics
87.50 Biological effects of radiations
87.50B *Interactions of biosystems with radiations*
87.50C *Bioacoustics (sonic and ultrasonic effects on living matter)*
87.50E *Bio-optics (effects of microwaves, light, laser and other electromagnetic waves)*
87.50G *Ionizing radiations (u.v., X-ray, gamma-ray; particle radiation effects)*
87.60 Medical and biomedical uses of fields, radiations, and radioactivity
87.60B *Sonic and ultrasonic radiation*
87.60D *Electric and magnetic fields (d.c. and pulsed)*
87.60G *Laser beams, microwaves, and other electromagnetic waves*
87.60J *Corpuscular radiation and radioisotopes*
87.60L *Preparation of radioactive materials for medical and biomedical uses*
87.60M *Radiation dosimetry*
87.60P *Radiation protection*
87.60R *Radioactive pollution*
87.65 Aerospace biophysics and medical physics (effects of accelerations, weightlessness and environment)
87.70 Biomedical engineering
87.70E *Diagnostic methods and instrumentation*
87.70G *Patient care and treatment*
87.70J *Prosthetics and other practical applications*
87.80 Biophysical instrumentation and techniques
87.90 Other topics in biophysics, medical physics, and biomedical engineering

90.00 **GEOPHYSICS, ASTRONOMY AND ASTROPHYSICS**

91.00 SOLID EARTH GEOPHYSICS
91.10 Geodesy and gravity
91.25 Geomagnetism and palaeomagnetism; geoelectricity
91.30 Seismology
91.35 Earth's interior structure and properties
91.40 Volcanology
91.45 Physics of plate tectonics
91.50 Marine geology and geophysics
91.60 Physical properties of rocks and minerals
91.65 Geophysical aspects of geology, mineralogy and petrology
91.90 Other topics in solid Earth geophysics

92.00 HYDROSPHERIC AND ATMOSPHERIC GEOPHYSICS
92.10 Physics of the oceans
92.20 Interdisciplinary aspects of oceanography
92.40 Hydrology and glaciology
92.60 Meteorology
92.60S *Climatology*
92.65 Atmospheric optics
92.90 Other topics in hydrospheric and atmospheric geophysics

93.00 GEOPHYSICAL OBSERVATIONS, INSTRUMENTATION, AND TECHNIQUES
93.30 Information related to geographical regions
93.55 International organizations, national and international programs
93.65 Data acquisition and storage
93.85 Instrumentation and techniques for geophysical research

94.00 AERONOMY AND SPACE PHYSICS
94.10 Physics of the neutral atmosphere
94.10Q *Airglow and nightglow*
94.10S *Aurora*
94.20 Physics of the ionosphere
94.30 Physics of the magnetosphere
94.40 Cosmic rays

94.40C *Origin and propagation outside the solar system*
94.40E *Interplanetary propagation and effects*
94.40H *Energetic solar particles and photons*
94.40K *Solar modulation and geophysical effects*
94.40L *Composition and energy spectra*
94.40N *Extensive air showers*
94.40R *High-energy interactions*
94.40T *Muons and neutrinos*
94.40V *Cosmic-ray effects in meteorites and terrestrial matter*
94.60 Interplanetary space
94.80 Aerospace facilities and techniques; space research
94.90 Other topics in space physics

95.00 FUNDAMENTAL ASTRONOMY AND ASTROPHYSICS, INSTRUMENTATION AND TECHNIQUES AND ASTRONOMICAL OBSERVATIONS
95.10 Fundamental astronomy
95.10C *Celestial mechanics*
95.30 Fundamental aspects of astrophysics
95.45 Observatories
95.55 Astronomical instruments
95.65 Auxiliary and recording instruments
95.70 Other instrumentation and techniques
95.75 Techniques of observation and reduction
95.80 Astronomical observations (listed by techniques of observation)
95.80D *Radio and radar*
95.80G *Far infrared (bolometric, photoconductive)*
95.80J *Photographic region (near infrared, visible, and normal ultraviolet)*
95.80M *Space ultraviolet*
95.80N *X-ray*
95.80Q *Gamma-ray and elementary particle*
95.80S *Other (including gravitational radiation, magnetograms, etc.)*
95.85 Catalogues, atlases, etc.
95.90 Other topics in astronomy and astrophysics

96.00 SOLAR SYSTEM
96.10 General, solar nebula, and cosmogony
96.20 Moon
96.30 Planets and satellites
96.30D *Mercury*
96.30E *Venus*
96.30G *Mars*
96.30H *Asteroids*
96.30K *Jupiter*
96.30M *Saturn*
96.30T *Other planets*
96.50 Other objects in the planetary system
96.50D *Interplanetary matter, magnetic and electric fields*
96.50G *Comets*
96.50K *Meteors, showers, and meteoroids*
96.50M *Meteorites, micrometeorites*
96.60 Solar physics
96.90 Other topics on the solar system

97.00 STARS
97.10 Stellar characteristics
97.20 Normal stars (by class): general or individual
97.30 Variable and peculiar stars
97.60 Late stage of stellar evolution
97.60B *Supernovae*
97.60G *Pulsars*
97.60J *Neutron stars*
97.60L *Black holes*
97.80 Binary and multiple stars
97.90 Other topics in stellar astronomy

98.00 STELLAR SYSTEMS: GALACTIC AND EXTRAGALACTIC OBJECTS AND SYSTEMS; THE UNIVERSE
98.10 Stellar dynamics
98.20 Stellar clusters and associations
98.40 Interstellar matter; and nebulae
98.50 The Galaxy, extragalactic objects and systems
98.50K *Groups, clusters, superclusters*
98.70 Other objects and background radiations of unknown origin and distances
98.70D *Discrete radio sources*
98.70J *Quasars*
98.70L *IR sources*
98.70Q *X-ray and gamma-ray sources*
98.70S *Cosmic ray sources*
98.70V *Background radiations*
98.80 Cosmology
98.90 Other topics in galactic and extragalactic astronomy

00.00 GENERAL

02.00 MATHEMATICAL METHODS IN PHYSICS

Comments on tensor analysis in generalized spacetimes. Mann, R.B., 1334.

02.20 Group theory

Basis states for equivalent electrons. III. States for the Lie group $SO(2l + 1) \times SU(2)$ using $Sp(4l + 2)$ states. Ross, W.R., 207.
Basis states for equivalent electrons. IV. States for the Lie group $SO(2l + 1) \times SU(2)$ using $U(2l + 1) \times SU(2)$ states. Ross, W.R., 315.

02.40 Geometry differential geometry, and topology

On embeddings of the Kerr geometry. Sharp, N.A., 688.

02.50 Probability theory, stochastic processes, and statistics

A note on the criteria for fitting functions to measured points. Daniels, J.M., 182.

02.60 Numerical approximation and analysis

A method to accelerate convergence of Hartree–Fock calculations. Sprung, D.W.L., and Vallières, M., 177.
A discrete method of constructing central and angular-momentum dependent potentials. Hooshyar, M.A., and Razavy, M., 1627.

02.70 Computational techniques

Errata: Approximate solutions to the half-space integral transport equation near a plane boundary. Milgram, M.S., 966.

03.00 CLASSICAL AND QUANTUM PHYSICS; MECHANICS AND FIELDS

03.20 Classical mechanics of discrete systems: general mathematical aspects

Potential energies of one-dimensional systems at equilibrium. Ahmed, S., 859.

03.30 Special relativity

The rotation and precession of relativistic reference frames. Hamilton, J.D., 213.

03.50 Classical field theory

Hydrodynamical description of the continuous Heisenberg chain. Turski, L.A., 511.

03.65 Quantum theory; quantum mechanics

Conserved quantum probability currents on stochastic phase space. Ali, S.T., Gagnon, R., and Prugovečki, E., 807.
Bound state energies and scattering phase shifts in a short-range potential. Banerjee, S.N., and Chakraborty, P., 1653.

03.80 General theory of scattering

Time-delay caused by scattering from an oscillating center of force. Hron, M., and Razavy, M., 394.
A phase space moment method for classical and quantal dynamics. Turner, R.E., and Snider, R.F., 457.
A discrete method of constructing central and angular-momentum dependent potentials. Hooshyar, M.A., and Razavy, M., 1627.

04.00 RELATIVITY AND GRAVITATION

Experimental tests of a new theory of gravitation. Moffat, J.W., 283.
Erratum: Experimental tests of a new theory of gravitation. Moffat, J.W., 1289.

04.20 General relativity

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